What is claimed is:

1. An image display apparatus comprising:

an image display element; and

an observation optical system which forms an exit pupil for observation of an image displayed on said image display element,

wherein said observation optical system has at least one surface that has a lens function, and the following condition is satisfied:

$$0.1 < P \cdot PD \cdot ZD < 5$$

where $P$ is a pixel pitch (in $\mu m$) of said image display element, $PD$ is a diameter (in $mm$) of said exit pupil, and $ZD$ is a distance (in $mm$) from a display surface of said image display element and a first surface which has a lens function.

2. An image display apparatus comprising:

an image display element; and

an observation optical system which forms an exit pupil for observation of an image displayed on said image display element,

wherein said observation optical system comprises at least one diffraction element that is given a lens function by diffraction effect and an optical member that satisfies the following condition:

$$a < 90$$

where $a$ is a transmittance (in %) for a wavelength range of $450nm$-$650nm$.

3. An image display apparatus comprising:

an image display element; and

an observation optical system which forms an exit pupil for observation of an image displayed on said image display element,

wherein said observation optical system comprises:

a first unit that comprises at least one prism member with a positive refracting power; and

a second unit, and

said first unit is constructed to be movable for alignment of optical axes.

4. An image display apparatus comprising:

an image display element; and

an observation optical system which forms an exit pupil for observation of an image displayed on said image display element,

wherein said observation optical system comprises:

a first unit that comprises at least one prism member with a positive refracting power; and

a second unit with a positive refracting power,

a primary image surface is formed between said first unit and said second unit, and

the following condition is satisfied:

$$0.1 < P \cdot PD \cdot ZDD < 5$$

where $P$ is a pixel pitch (in $\mu m$) of said image display element, $PD$ is a diameter (in $mm$) of the exit pupil, and $ZDD$ is a distance (in $mm$) along an optical axis from the primary image surface to an optical element that is located closest to the primary image surface.

5. An image display apparatus comprising:

an image display element; and

an observation optical system which forms an exit pupil for observation of an image displayed on said image display element,

wherein said observation optical system has a positive refracting power, and the following condition is satisfied:

$$0.02 \times 10^{-2} < \alpha \cdot P < 2 \times 10^{-2}$$

where $\alpha$ is a field angle (in *rad.*) of said observation optical system, and $P$ is a pixel pitch (in $\mu m$) of said image display element.

6. An image display apparatus comprising:

an image display element;

an observation optical system which forms an exit pupil for observation of an image displayed on said image display element; and

a clip section,

wherein said observation optical system has a positive refracting power, and a frame member provided with said observation optical system is integrally formed with said clip section.

7. An image display apparatus according to claim 1, wherein said observation optical system comprises:

a first optical member comprising a first surface that has an action of reflecting bundles of rays from said image display element; and

a second optical member having an action of further reflecting the bundles of rays reflected from said first

surface, and

wherein a space between said first optical member and said second optical member is filled with gas.

8. An image display apparatus according to claim 1, wherein at least one surface of said observation optical system is constructed of a diffraction element which is given a lens function by diffraction effect.

9. An image display apparatus according to claim 1, wherein the following condition is satisfied:

$$0.5 < P \cdot PD \cdot ZD < 2.$$

10. An image display apparatus according to claim 1, wherein at least one surface of said observation optical system has a curved surface shape to exert a power on bundles of rays, and said curved surface shape is configured as a rotationally asymmetric surface shape to compensate aberrations generated by decentering.

11. An image display apparatus according to claim 2, wherein at least one another optical element disposed between the exit pupil and said optical member is a diffraction element.

12. An image display apparatus according to claim 2, wherein said observation optical system comprises at least one prism member, and said prism member has an entrance surface via which bundles of rays emergent from said image display element enter said prism member, at least one reflecting surface which reflects

the bundles of rays inside said prism member, and an exit surface via which the bundles of rays exit out of said prism member, and

wherein said at least one reflecting surface has a curved surface shape to exert a power on bundles of rays, and said curved surface shape is configured as a rotationally asymmetric surface shape to compensate aberrations generated by decentering.

13. An image display apparatus according to claim 2, wherein said optical member satisfies the condition:

$$a < 50.$$

14. An image display apparatus according to claim 3, wherein at least one surface in said observation optical system is configured as an optical element that is given a lens function by diffraction effect.

15. An image display apparatus according to claim 3, wherein said at least one prism member in said observation optical system has an entrance surface via which bundles of rays emergent from said image display element enter said prism member, at least one reflecting surface which reflects the bundles of rays inside said prism member, and an exit surface via which the bundles of rays exit out of said prism member, and

wherein said at least one reflecting surface has a curved surface shape to exert a power on the bundles of rays, and the curved surface shape is configured as a rotationally asymmetric surface shape to compensate aberrations generated by decentering.

16. An image display apparatus according to claim 3, wherein said second unit has a positive refracting power.

17. An image display apparatus according to claim 3, wherein, for alignment of an optical axis of said image display element, an optical axis of said first unit and an optical axis of said second unit, said first unit is adjusted so that, upon a first pinhole being arranged on an exit surface side of said first unit and aligned with the optical axis of said first unit and a second pinhole being arranged on an exit surface side of said second unit and aligned with the optical axis of said second unit, and then upon a central portion of said image display element being made to flash as a point light source, said point light source is observable through said first pinhole and said second pinhole.

18. An image display apparatus according to claim 3, wherein a photographing optical system is disposed on an exit pupil side so as to photograph an image displayed on said LCD.

19. An image display apparatus according to claim 3, wherein said first unit is fixed with adhesive after alignment of the optical axes.

20. An image display apparatus according to claim 4, wherein a member that has an action of interrupting stray light from said image display element is disposed between said image display element and said exit pupil.

21. An image display apparatus according to claim 4, wherein at least one flare stop is disposed between said first unit and said second unit.

22. An image display apparatus according to claim 4, wherein at least one prism member of said observation optical system has an entrance surface via which bundles of rays emergent from said image display element enter said prism member, at least one reflecting surface which reflects the bundles of rays inside said prism member, and an exit surface via which the bundles of rays exit out of said prism member, and

wherein said at least one reflecting surface has a curved surface shape to exert a power on bundles of rays, and said curved surface shape is configured as a rotationally asymmetric surface shape to compensate aberrations generated by decentering.

23. An image display apparatus according to claim 4, whrein the following condition is satisfied:

$$0.5 < P \cdot D \cdot ZDD < 2.$$

24. An image display apparatus according to claim 5, wherein said observation optical system comprises a first unit with a positive refracting power and a second unit.

25. An image display apparatus according to claim 24, wherein said first unit comprises at least one prism member having a positive refracting power, and said prism member has an entrance surface via which bundles of rays emergent from said image display

element enter said prism member, at least one reflecting surface which reflects the bundles of rays inside said prism member, and an exit surface via which the bundles of rays exit out of said prism member, and

wherein said at least one reflecting surface has a curved surface shape to exert a power on bundles of rays, and said curved surface shape is configured as a rotationally asymmetric surface shape to compensate aberrations generated by decentering.

26. An image display apparatus according to claim 24, wherein said second unit has a positive refracting power.

27. An image display apparatus according to claim 5, wherein at least one surface in said observation optical system is an optical element that is given a lens function by diffraction effect.

28. An image display apparatus according to claim 5, wherein the following condition is satisfied:

$$0.05 < P \cdot LD < 2$$

where $LD$ is a distance (in $mm$) taken along an image center between a last surface of said observation optical system and the exit pupil.

29. An image display apparatus according to claim 5, wherein the following condition is satisfied:

$$0.1 \times 10^{-2} < \alpha \cdot P < 1 \times 10^{-2}.$$

30. An image display apparatus according to claim 5, wherein the following condition is satisfied:

$$0.1 < P \cdot LD < 1$$

where $LD$ is a distance (in $mm$) between a last surface of said observation optical system and the exit pupil taken along an image center.

31. An image display apparatus according to claim 6, wherein said observation optical system comprises a first unit having a positive refracting power and a second unit.

32. An image display apparatus according to claim 31, wherein said first unit comprises at least one prism member having a positive refracting power, and said prism member has an entrance surface via which bundles of rays emergent from said image display element enter said prism member, at least one reflecting surface which reflects the bundles of rays inside said prism member, and an exit surface via which the bundles of rays exit out of said prism member, and

wherein said at least one reflecting surface has a curved surface shape to exert a power on bundles of rays, and said curved surface shape is configured as a rotationally asymmetric surface shape to compensate aberrations generated by decentering.

33. An image display apparatus according to claim 32, wherein said second unit has a positive refracting power.

34. An image display apparatus according to claim 32, wherein

at least one surface in said observation optical system is a diffraction optical element.